

Abstract of the Disclosure

A multistage amplifier is disclosed for amplifying light over a wavelength band.

5 A first and second span of amplifying fiber are optically coupled and a gain flattening filter (GFF) in-line with one of two spans of amplifying fiber is provided for attenuating certain wavelengths of amplified light. A first gain spectral response of the first and second spans of amplifying fiber including the GFF are measured over the wavelength band, and the shape of a ripple that oscillates as a function of wavelength in the form of a plurality of peaks or maxima and valleys in the form of minima occur at a plurality of
10 different wavelengths, each different wavelength corresponding to a different channel. A second filter is provided finishing or compensating filter having a second spectral response that has a second plurality of peaks in the form of maxima and valleys in the form of minima is provided. The second filter is designed so that the second spectral response is absent at least 50% of four most predominant peaks or valleys at channels
15 where peaks or valleys, respectively, were present in the first spectral response. The maximum ripple amplitude in the second spectral response is less than a maximum ripple amplitude in the first gain spectral response. This arrangement lessens unwanted effects of systematic error occurring when filters having similar ripple responses with
20 wavelength are cascaded.